



Fermilab

Accelerator Physics Center

LBNE ABSORBER SYSTEM, Version 4: NORMAL OPERATION AND ACCIDENTS

Nikolai Mokhov

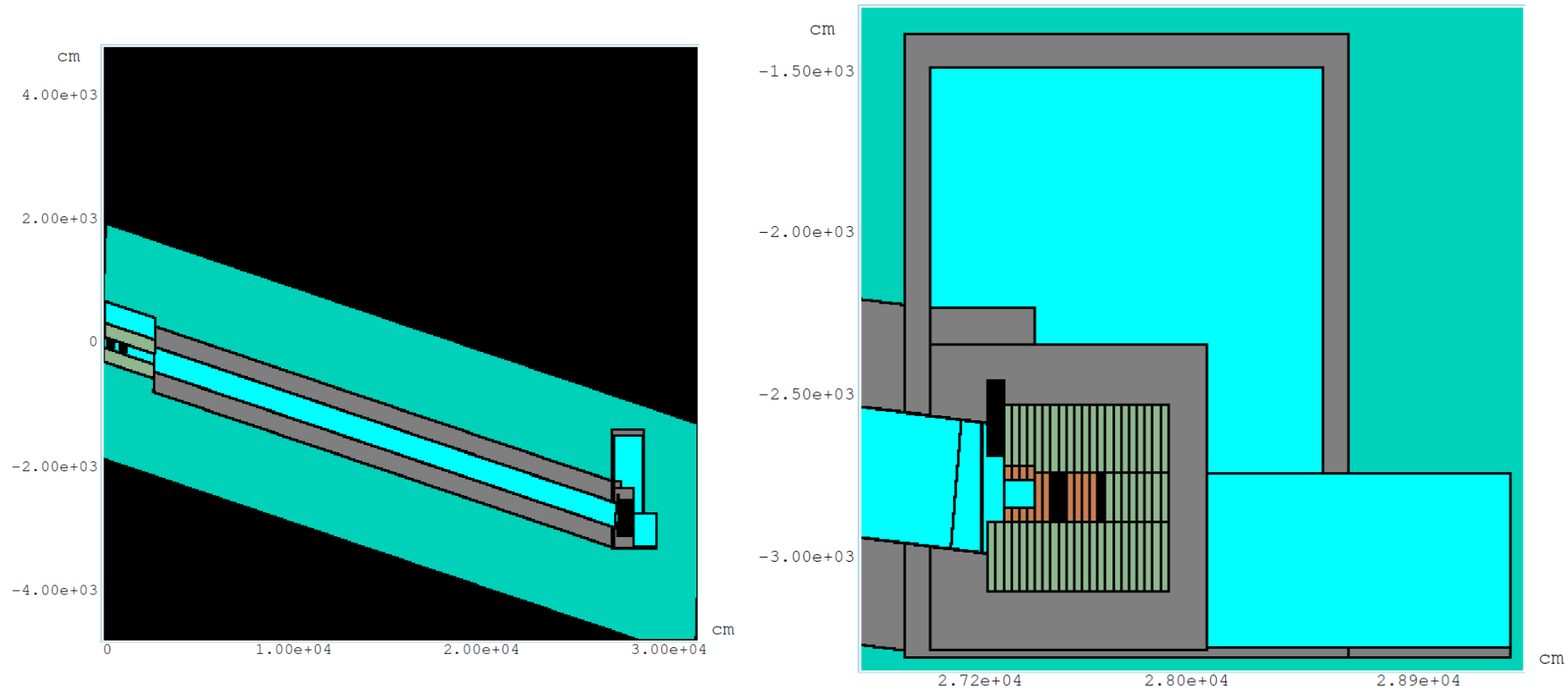
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LBNE Absorber Meeting

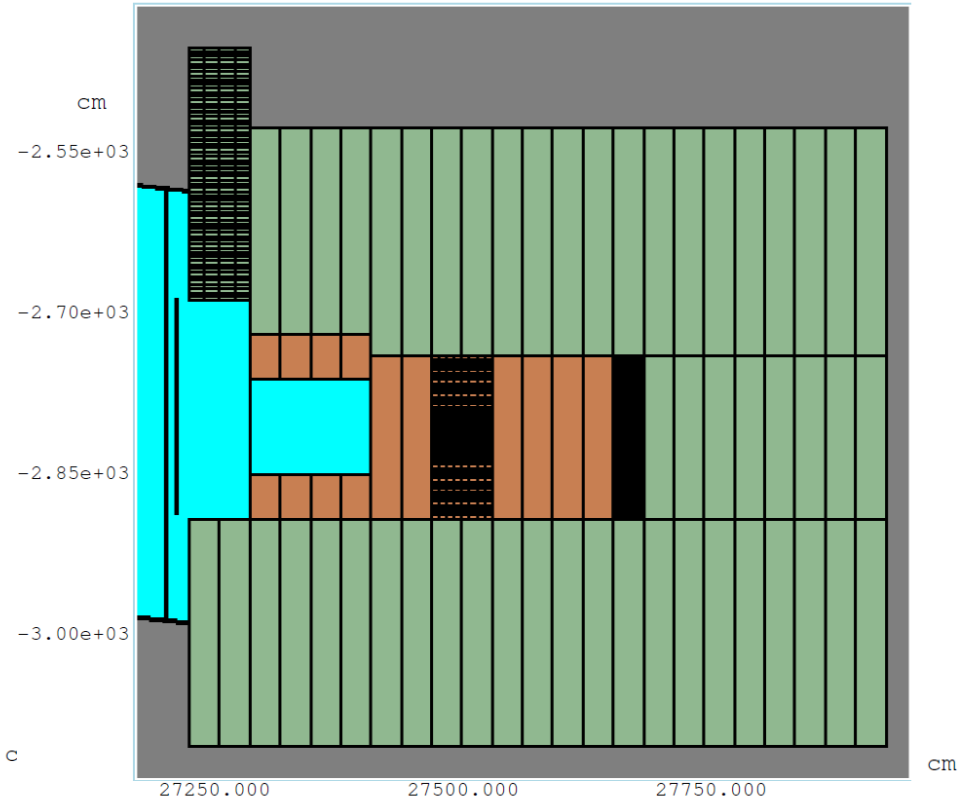
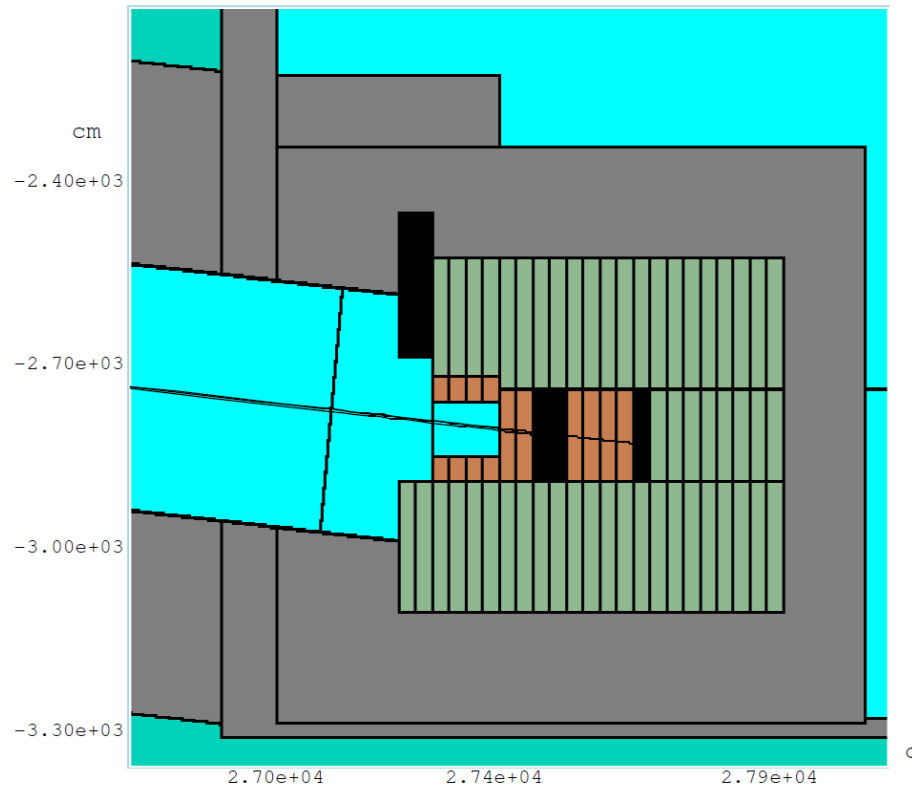
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July 19, 2010

MARS15 Model: Version 4

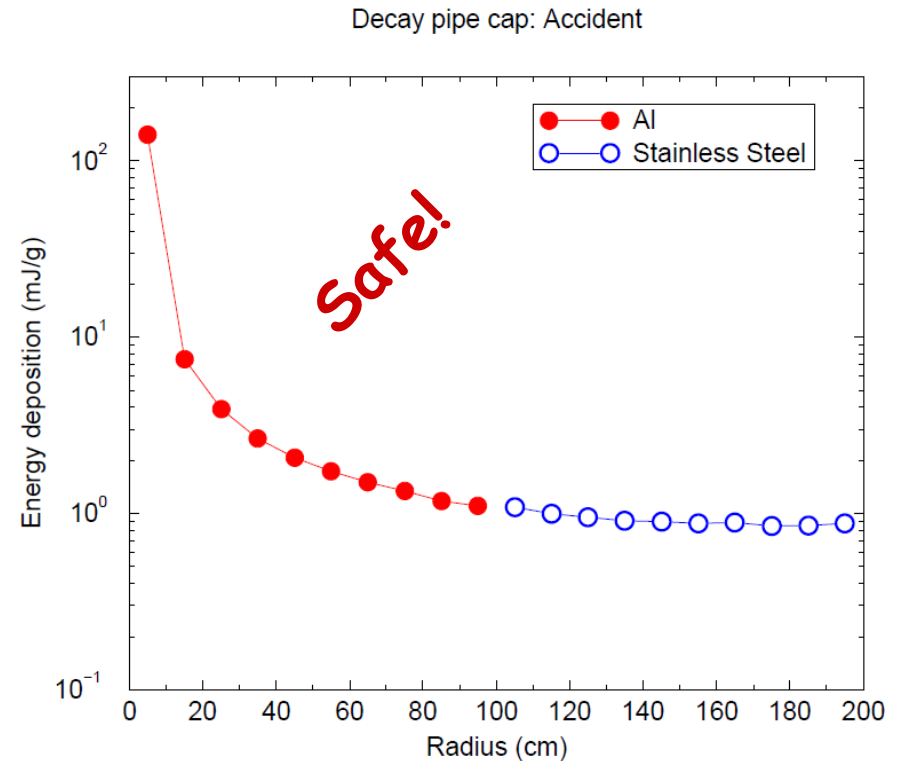
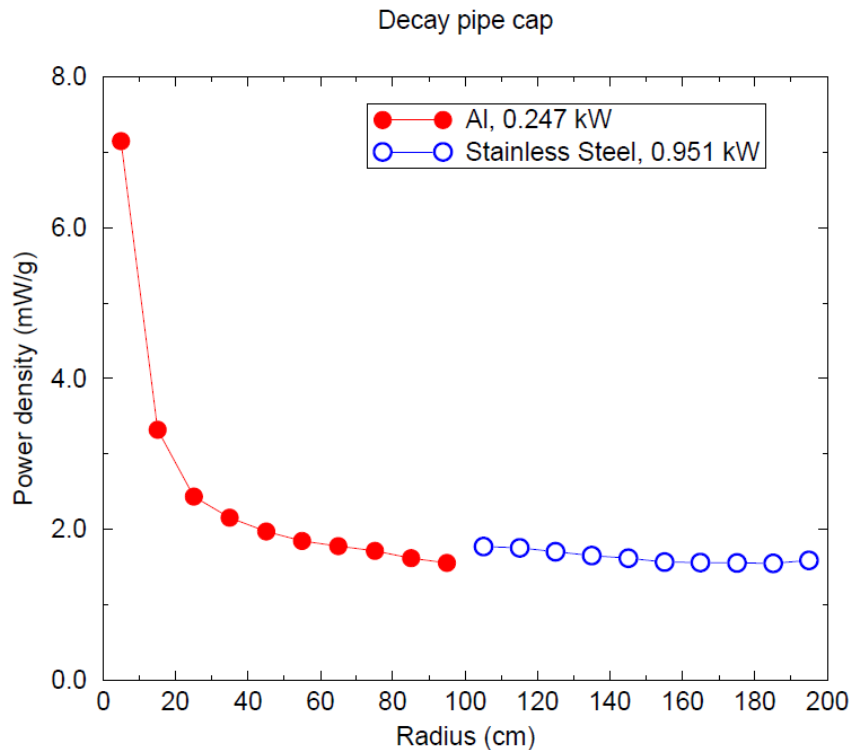


Absorber, Shielding, DK Cap, Hadron Monitor



Normal operation and beam accident at 2.3 MW

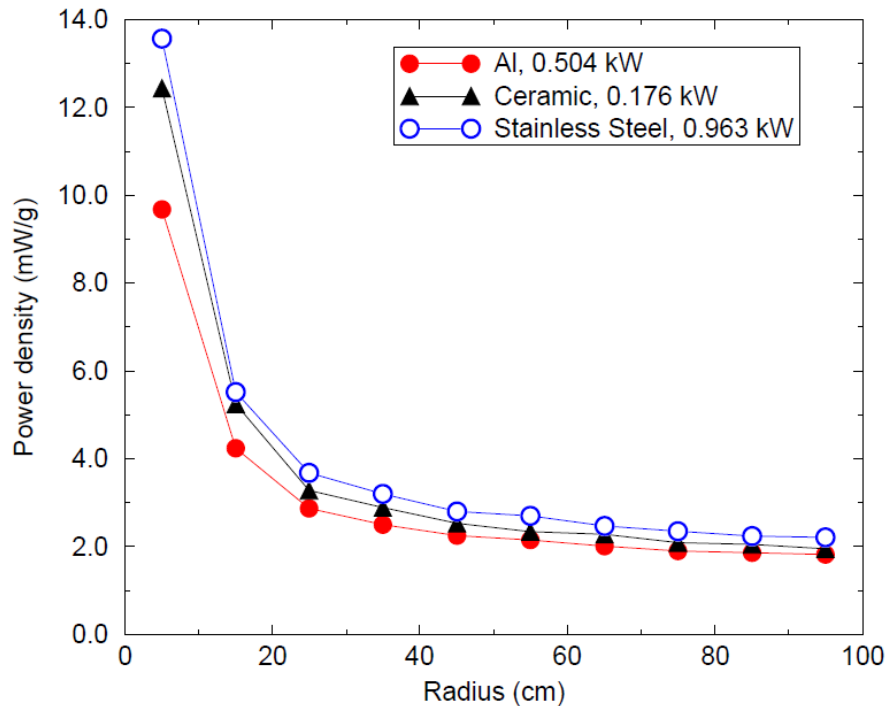
Decay Pipe Endcap: Operational & Accident



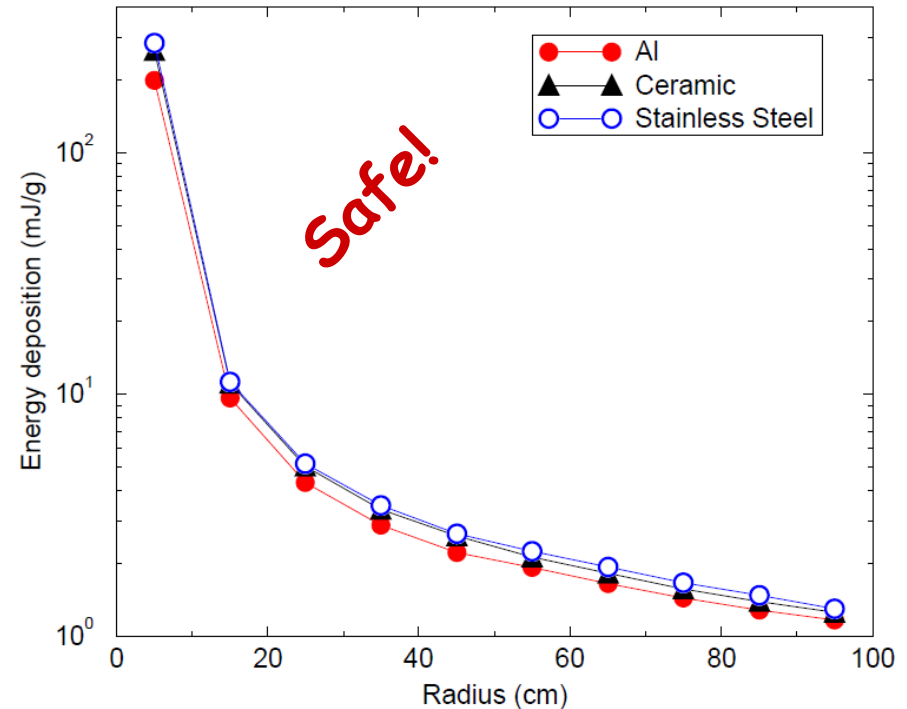
6-mm thick Al ($0 < r < 1\text{m}$) & SS ($1 < r < 2\text{m}$): Safe at 2.3 MW

Hadron Monitor: Operational & Accident

LBNE Hadron monitor

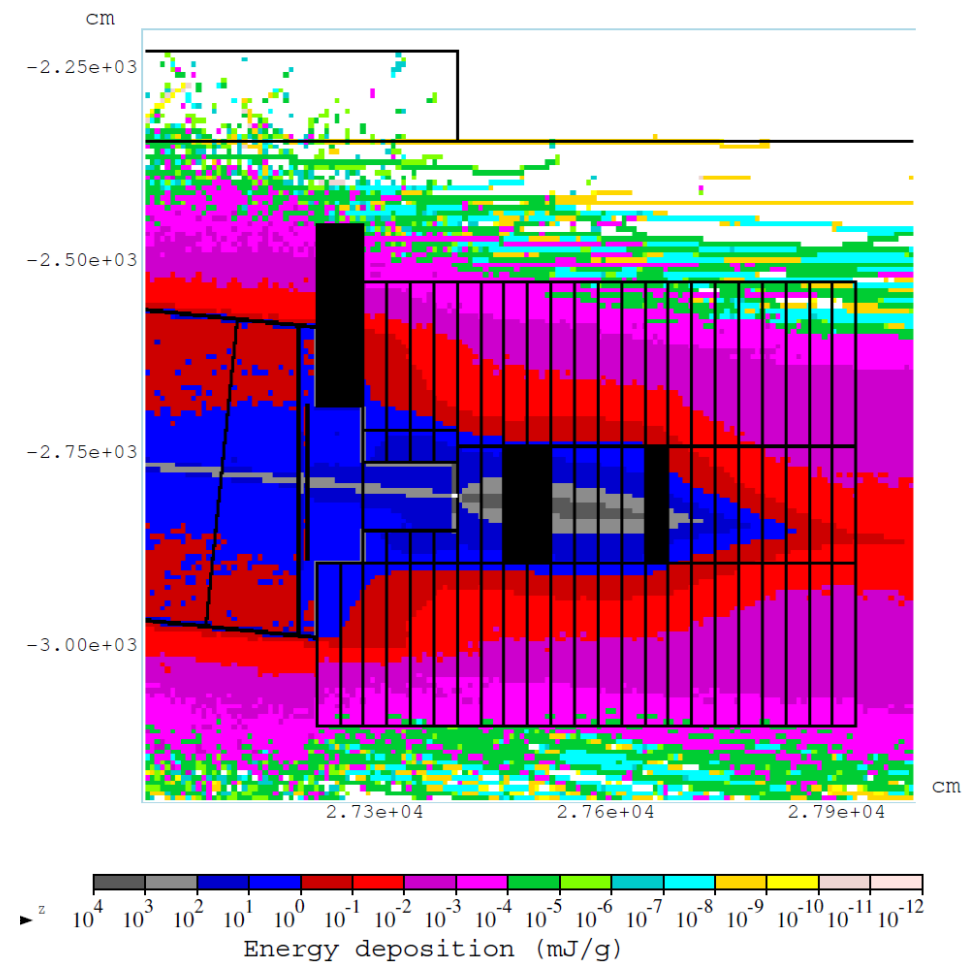
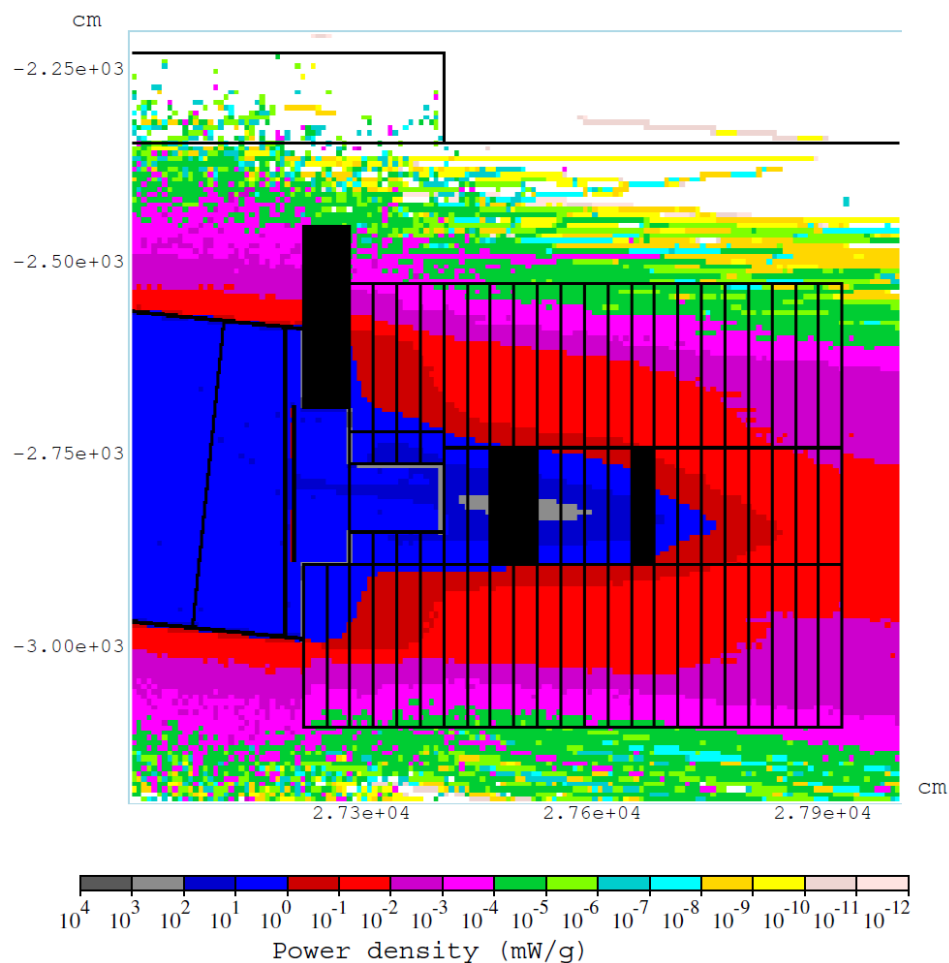


LBNE Hadron monitor: Accident



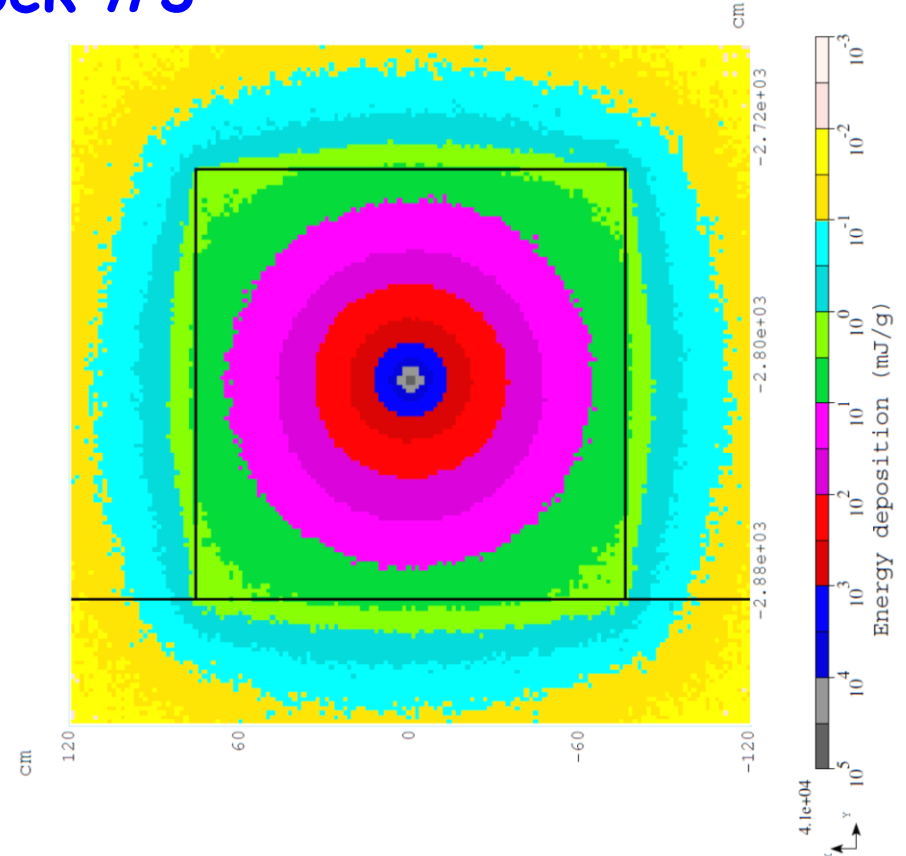
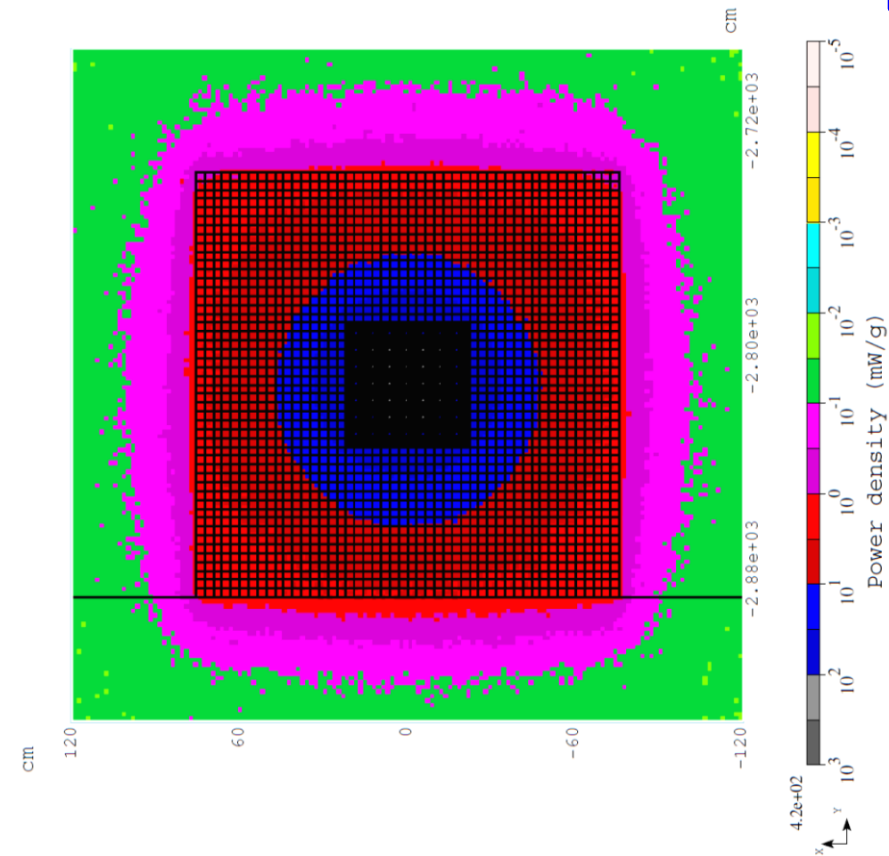
10-mm Al, 2-mm Ceramic, 5-mm SS ($0 < r < 1\text{m}$):
Safe at 2.3 MW

Power Density (operational) & Energy Deposition (acc)



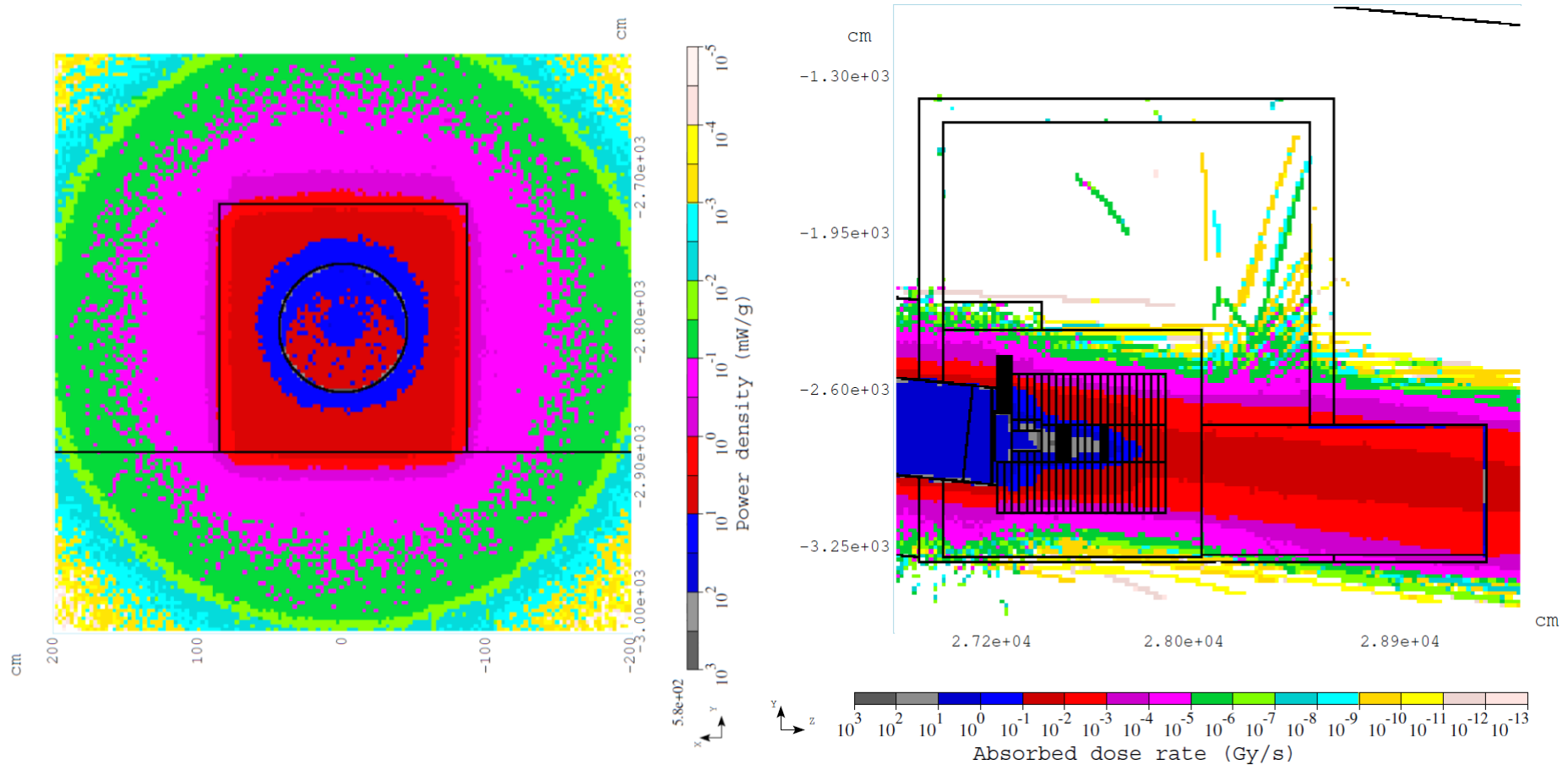
Power Density (oper) & Energy Deposition (acc)

Block #3



Results sent to Igor for ANSYS analysis

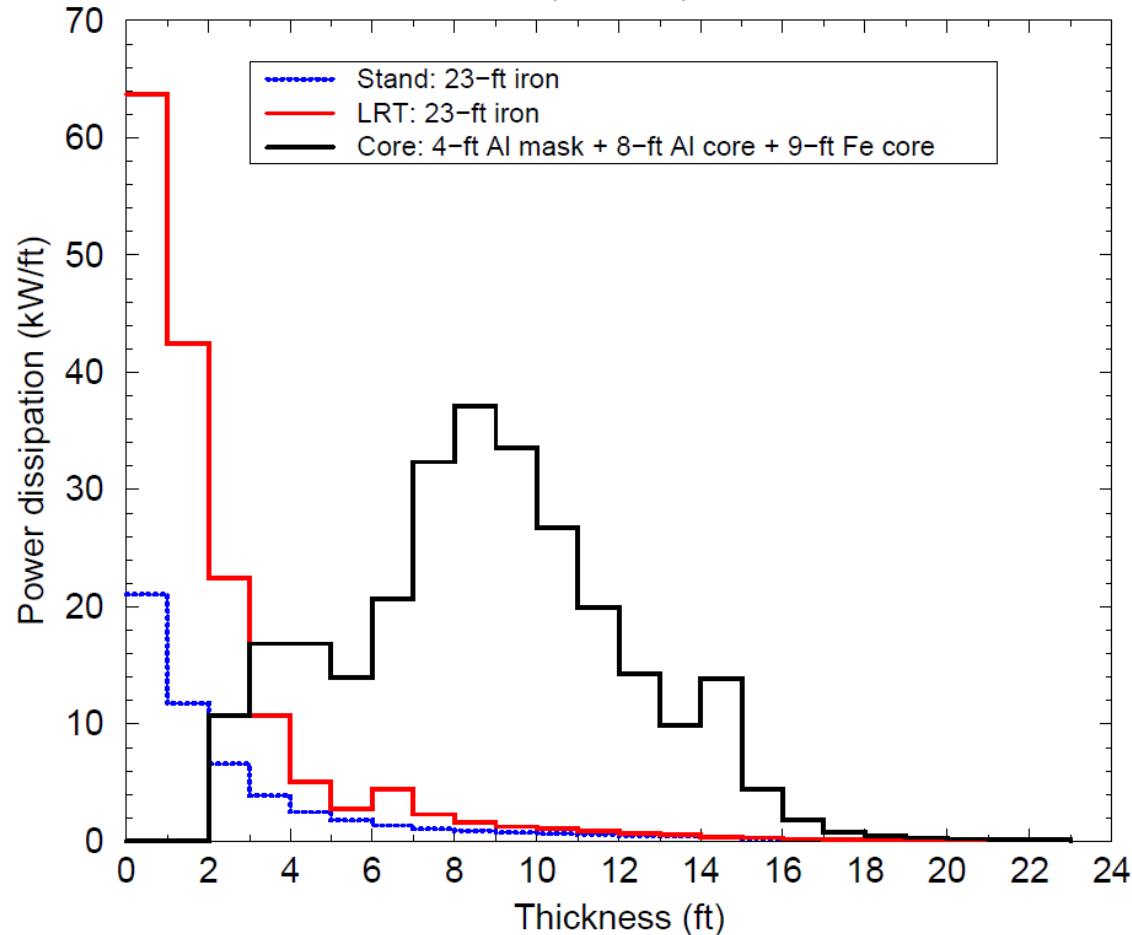
Power Density at Mask & Absorbed Dose



Heat Load

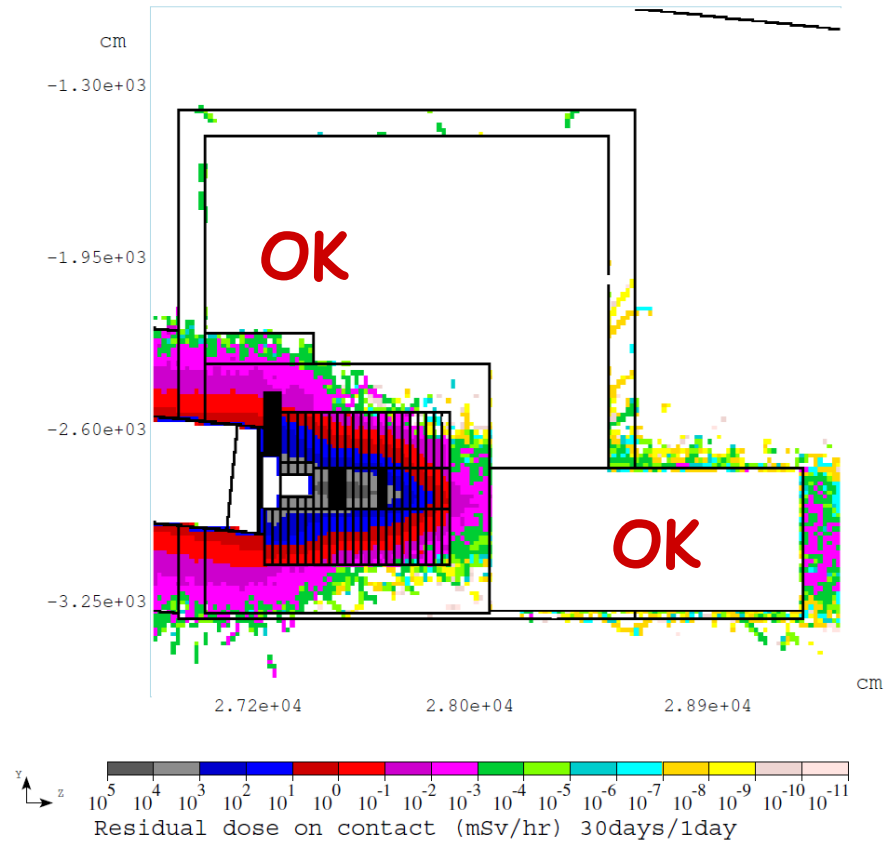
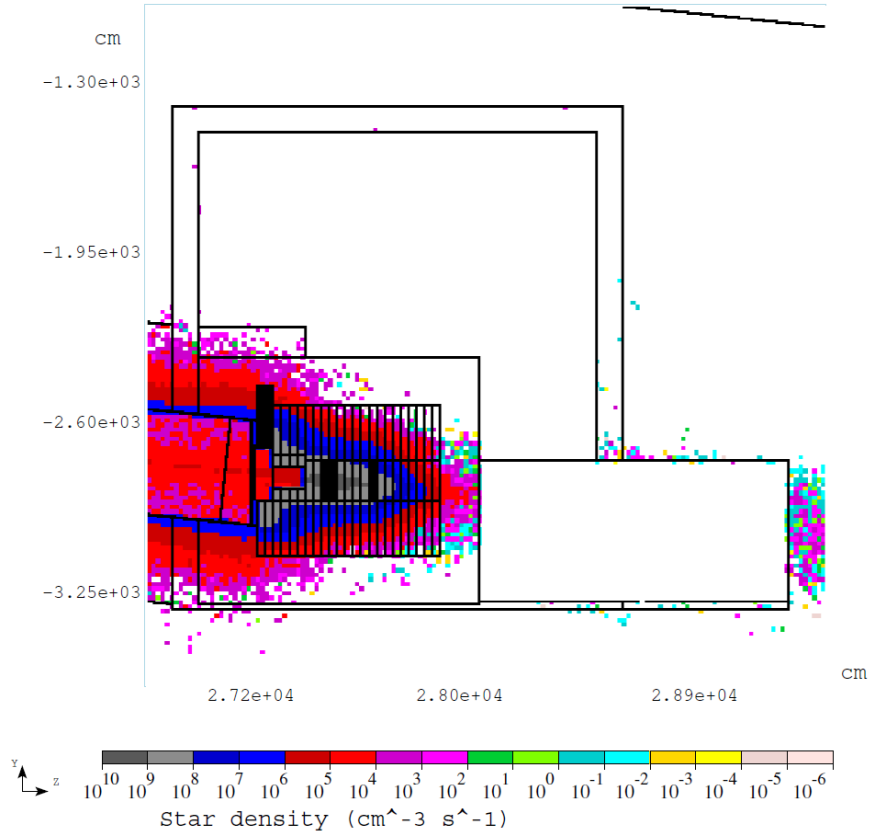
LBNE 2.3 MW: Heat load in absorber core and iron shield

Version 4, MARS15, 07/20/10



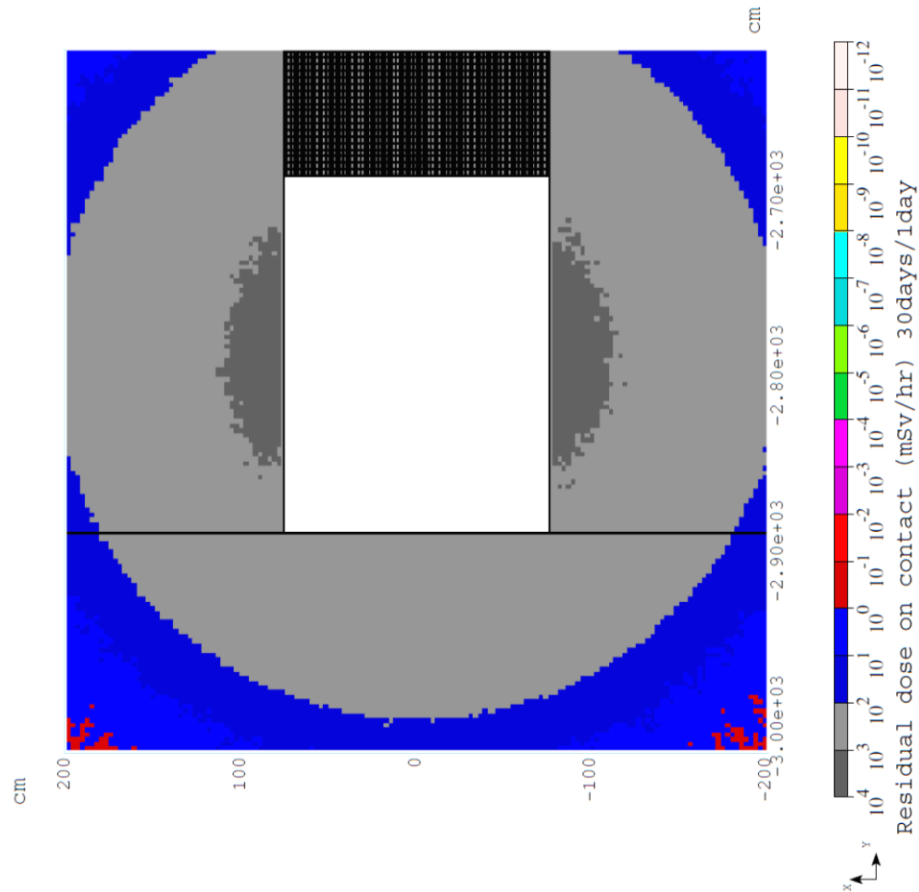
Power dissipation in all absorber components sent to Sasha

Star Density and Residual Dose

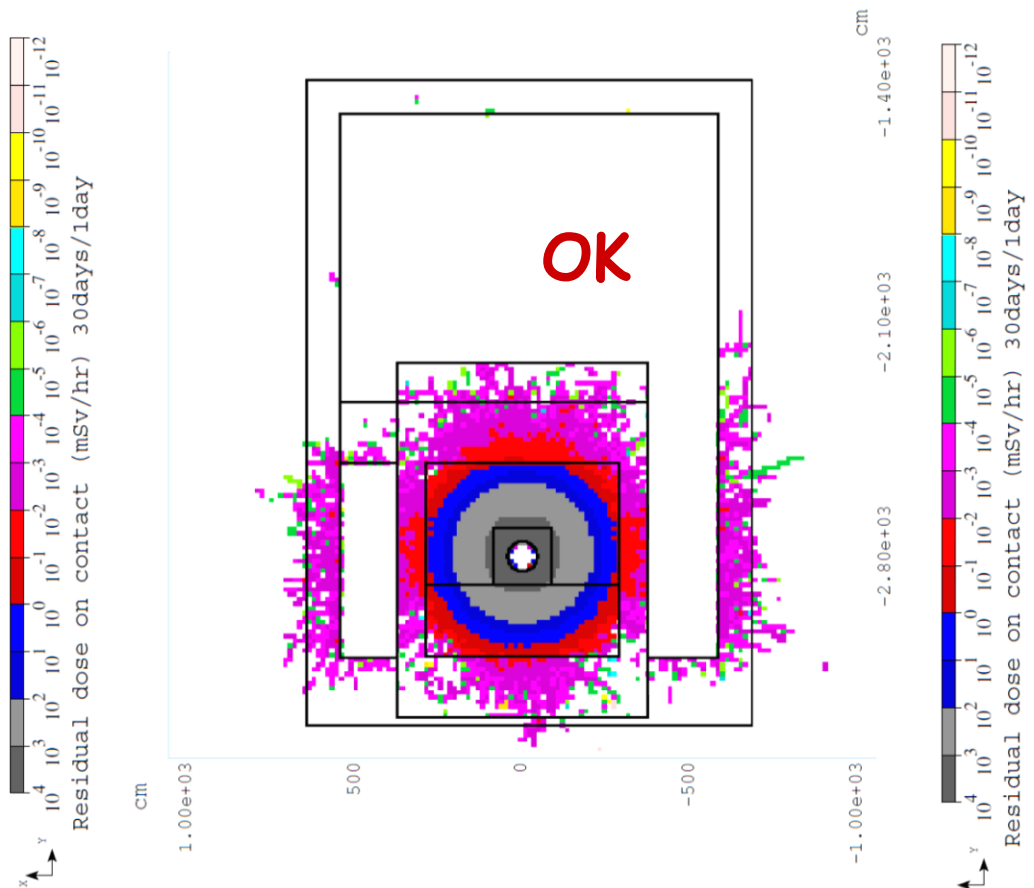


Safe for ground water!

Residual Dose on Contact (mSv/hr) at 30d/1d



Entrance



At shower max

Prompt Dose (mSv/hr)

